

# Data Validation Report

Project: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling  
 Portland Harbor Superfund Site  
 Sediment Traps-October 2018

Laboratory: TestAmerica Laboratories, Incorporated, Seattle, WA

Laboratory Group: 580-81511-1

Analyses: Petroleum Hydrocarbons, Metals, Total Organic Carbon (TOC), Total Solids, and Grain Size

Validation Level: Stage 2A

AECOM Project  
 Number: 60566335, Task #2.12

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## SUMMARY

The data quality review of four sediment trap samples and one rinsate blank collected on October 31, 2018, has been completed. Samples were analyzed for total petroleum hydrocarbons (TPHs, diesel-range and motor oil-range) by Washington State Department of Ecology (Ecology) Method NWTPH-Dx; metals by United States Environmental Protection Agency (EPA) Method 6020B (arsenic, cadmium, copper, lead, and zinc), EPA Method 7471A (mercury in sediments), and EPA Method 7470A (mercury in water); TOC by EPA Method 9060 (sediments) and Standard Method (SM) 5310B (water); total solids by American Society for Testing and Materials (ASTM) Method D-2216; moisture content at 70 degrees centigrade (°C); and grain size by ASTM Method D7928/D6913 by TestAmerica Laboratories, Incorporated (TA) located in Tacoma, Washington. The analyses were performed in general accordance with the methods specified in EPA's *Test Methods for Evaluating Solid Waste (SW-846)*, Ecology's *Analytical Methods for Petroleum Hydrocarbons*, June 1997, [Annual Book of ASTM Standards](#), American Society for Testing & Materials (ASTM), Philadelphia, Pennsylvania, and [Standard Methods for the Examination of Water and Wastewater](#). The laboratory provided level 2 and level 4 data packages containing sample results, and associated quality assurance (QA) and quality control (QC) data, preparation logs, and raw instrument outputs (where applicable). The following samples are associated with laboratory group 580-81511-1:

Sample ID	Laboratory ID
PDI-ST-T06B-1810	580-81511-1
PDI-ST-T06A-1810	580-81511-2
PDI-ST-T07A-1810	580-81511-3
PDI-ST-T07B-1810	580-81511-4
PDI-RB-ST-1810 (rinsate blank)	580-81511-5

Data validation is based on method performance criteria and QC criteria documented in the *Quality Assurance Project Plan (QAPP)*, dated March 23, 2018, as amended. If data qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in the EPA documents *USEPA National Functional Guidelines for Organic Superfund Methods Data Review*, January 2017, and *USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review*, January 2017. Data qualifiers assigned to this sample set are included in Table 1.



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**SAMPLE RECEIPT**

Upon receipt by TA, the sample jar information was compared to the chain-of-custody (COC) and the cooler temperatures were recorded. The coolers were received at temperatures within the EPA-recommended limits of greater than 0°C and less than or equal to 6°C. No discrepancies related to sample identification were noted by TA.

**ORGANIC ANALYSES**

Samples were analyzed for TPHs by method NWTPH-Dx.

1. Holding Times – Acceptable

2. Blanks – Acceptable

One rinsate blank was reported with this laboratory group. TPHs were not detected in this rinsate blank.

3. Surrogates – Acceptable

4. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) – Acceptable

5. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable

An MS/MSD was performed using PDI-ST-T06A-1810. Results were acceptable.

6. Laboratory Duplicate – Acceptable

A laboratory duplicate was performed using PDI-ST-T07B-1810. The relative percent difference (RPD) for diesel-range hydrocarbons (49%) exceeded the control limit of 35%. The sample concentrations for diesel-range hydrocarbons were less than five times the reporting limit; therefore, data were not qualified based on the elevated laboratory duplicate RPD.

7. Reporting Limits – Acceptable

Analyte concentrations detected between the method detection limit (MDL) and the reporting limit are reported by the laboratory with a 'J' flag. Laboratory 'J'-flagged results are considered estimated results. As the result is between the MDL and the reporting limit, there is a greater level of uncertainty associated with the numerical result.

8. Other Items of Note:

The laboratory indicated that the diesel-range hydrocarbon elution patterns were later than the typical diesel pattern in PDI-ST-T06B-1810, PDI-ST-T06A-1810, PDI-ST-T07A-1810, and PDI-ST-T07B-1810.

The laboratory noted that the percent difference (%D) for the surrogate o-terphenyl (17%) in the continuing calibration verification (CCV) associated with analytical batch 289213 was outside the method limits of ±15%. The o-terphenyl recoveries were acceptable in all samples associated with this CCV; therefore, data were not qualified based on this CCV surrogate %D.

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## **METALS ANALYSES**

Samples were analyzed for metals by the methods identified in the introduction to this report.

1. Holding Times – Acceptable

2. Blanks – Acceptable except as noted below:

General – One rinsate blank was reported with this laboratory group. Arsenic (0.00030 mg/L), copper (0.0019 mg/L), and mercury (0.00096 mg/L) were detected in this rinsate blank. Sediment data were not qualified based on rinsate blank results.

3. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) – Acceptable

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) and Post-Digestion Spike (PDS, where applicable) – Acceptable except as noted below:

Metals by Method 6020B – An MS/MSD and PDS were performed using PDI-ST-T06A-1810. The percent recoveries for copper (79%) and zinc (75%) were below the control limits of 80-120% in the PDS. As the results were acceptable for copper and zinc in the MS/MSD, data were not qualified based on the percent recoveries in the PDS.

Mercury by Method 7471A – An MS/MSD was performed using PDI-ST-T06A-1810. The percent recovery for mercury in the MS (127%) exceeded the control limits of 80-120%. As the percent recovery in the MSD and the RPD for the MS/MSD pair were acceptable, data were not qualified based on the MS result.

Mercury by Method 7470A – An MS/MSD was not performed using a sample from this laboratory group. Accuracy and precision were assessed using the LCS/LCSD.

5. Laboratory Duplicate – Acceptable

Metals by Method 6020B – A laboratory duplicate was performed using PDI-ST-T06A-1810. Results were comparable.

Mercury by Method 7471A – A laboratory duplicate was performed using PDI-ST-T06A-1810. The RPD for mercury (26%) exceeded the control limit of 20%. The sample concentration for mercury in PDI-ST-T06A-1810 was less than five times the reporting limit; therefore, data were not qualified based on this elevated laboratory duplicate RPD.

Mercury by Method 7470A – A laboratory duplicate was not performed using a sample from this laboratory group. Precision was assessed using the LCS/LCSD.

6. Serial Dilution – Acceptable

Metals by Method 6020B – A serial dilution was performed using PDI-ST-T06A-1810.

7. Reporting Limits – Acceptable

General – One or more results in multiple samples were reported at concentrations between the reporting limits and the MDLs and were flagged 'J' by the laboratory. As described



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above, laboratory 'J'-flagged results are considered estimated results.

**CONVENTIONAL ANALYSES**

Samples were analyzed for TOC and total solids by the methods identified in the introduction to this report.

1. Holding Times – Acceptable except as noted below:

Total Solids by ASTM Method D-2216 – The 7-day holding time indicated for total solids in the QAPP was exceeded for all sediment samples in this laboratory group by 2 days due to an oversight by the laboratory. No data qualifiers were assigned based on the holding time exceedance.

2. Blanks – Acceptable where applicable, except as noted below:

TOC by Method 9060 – One rinsate blank was reported with this laboratory group. TOC (1.1 mg/L) was detected in this rinsate blank. Sediment data were not qualified based on rinsate blank results.

TOC (0.251 mg/L) was detected in a method blank associated with analytical batch 289087 at a concentration between the MDL and reporting limit. This method blank did not bracket any sample in this laboratory group; therefore, data were not qualified based on this method blank result.

3. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) - Acceptable
4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – Acceptable

TOC by Method 9060 – An MS/MSD was performed using PDI-ST-T06A-1810. Results were acceptable.

5. Laboratory Replicate – Acceptable

TOC by Method 9060 – A laboratory duplicate and triplicate were performed using PDI-ST-T06A-1810. Results were comparable.

Total Solids by ASTM Method D-2216 – A laboratory duplicate was performed using PDI-ST-T06B-1810. Results were comparable.

6. Reporting Limits – Acceptable

**GRAIN SIZE ANALYSES**

Samples were analyzed for grain size by the methods identified in the introduction to this report. The data were reviewed to confirm that the required grain size fractions identified in the QAPP were reported for each sample.



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1. Laboratory Duplicate – Acceptable

The laboratory performed duplicate analysis at a rate of 1 per 20 samples per their internal requirements. A laboratory duplicate was not performed using a sample from this laboratory group.

**OVERALL ASSESSMENT OF DATA**

The data reported in this laboratory group, as qualified, is considered usable for meeting project objectives. The completeness for laboratory group 580-81511-1 is 100%.

**Table 1**  
**QA/QC Data Summary Review**  
**Portland Harbor**  
**Sediment Trap-October 2018**  
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<b>Sample ID</b>	<b>Laboratory ID</b>	<b>Method</b>	<b>Analyte</b>	<b>Laboratory Result</b>	<b>Units</b>	<b>Final Result</b>	<b>Reason Code</b>
No data qualifiers were assigned to results reported in 580-81511-1 based on this data validation.							